

## Montana Board of Oil and Gas Conservation Environmental Assessment

**Operator:** Samson Oil and Gas USA Montana, Inc.

**Well Name/Number:** Gretel II 12KA 3

**Location:** SE SE Section 22 T28N R53E

**County:** Roosevelt, MT; Field (or Wildcat) Wildcat

### Air Quality

(possible concerns)

Long drilling time: No, 20-30 days drilling time.

Unusually deep drilling (high horsepower rig): Triple derrick drilling rig to drill to 16,326' MD/8800' TVD, single lateral horizontal Middle Bakken Formation test.

Possible H<sub>2</sub>S gas production: Yes, slight possibility.

In/near Class I air quality area: Yes, in a Class I air quality area, within Fort Peck Indian Reservation boundaries.

Air quality permit for flaring/venting (if productive): Yes, DEQ air quality permit required under 75-2-211.

Mitigation:

☒ Air quality permit (AQB review)

☐ Gas plants/pipelines available for sour gas

☐ Special equipment/procedures requirements

☐ Other: \_\_\_\_\_

Comments: Triple derrick drilling rig to drill a 16,326' MD/8800' TVD single lateral horizontal Middle Bakken Formation test.

### Water Quality

(possible concerns)

Salt/oil based mud: Yes, oil based invert drilling mud system to be used out from under surface casing. Brine water will be used to drill the horizontal lateral. Freshwater drilling mud system will be used on surface hole.

High water table: None anticipated.

Surface drainage leads to live water: No, closest surface drainage nearby is Elder Creek, an ephemeral tributary drainage to Missouri River, about 1/8 of a mile to the southeast from this location. The Missouri River is about 1 3/8 of a mile to the southwest from this location.

Water well contamination: According to GWIC, the closest water wells are about 1/8 of a mile to the west, 1/8 of a mile to the east, 3/16 of a mile to the northeast, 1/4 of a mile to the southeast, 5/8 of a mile to the southeast and 5/8 of a mile to the west from this location. Depth of these wells range from 30' to 260'. Surface hole will be drilled with freshwater and freshwater drilling fluids. Steel surface casing will be run to 1500' and cemented back to surface. To protect shallow ground waters and the Judith River Formation.

Porous/permeable soils: No, sandy silty clay soils.

Class I stream drainage: No, Class I stream drainages.

Mitigation:

☒ Lined reserve pit

☒ Adequate surface casing

☐ Berms/dykes, re-routed drainage

☐ Closed mud system

☒ Off-site disposal of solids/liquids (in approved facility)

☐ Other: \_\_\_\_\_

Comments: 1500' surface casing well ensure shallow ground water aquifers are isolated. Adequate surface casing and operational BOP equipment should prevent any problems.

### Soils/Vegetation/Land Use

(possible concerns)

Steam crossings: None anticipated, crossing only an ephemeral drainage, Elder Creek.

High erosion potential: No, a small cut, up to 2.91' and small fill, up to 2.53', required.

Loss of soil productivity: None, location to be restored after drilling well, if nonproductive. If productive unused portion of drillsite will be reclaimed.

Unusually large wellsite: No, large well site, 400'X327'.

Damage to improvements: Slight, surface use is a hay field.

Conflict with existing land use/values: Slight

Mitigation

☐ Avoid improvements (topographic tolerance)

☐ Exception location requested

☒ Stockpile topsoil

☐ Stream Crossing Permit (other agency review)

☒ Reclaim unused part of wellsite if productive

☐ Special construction methods to enhance reclamation

☐ Other \_\_\_\_\_

Comments: Existing county road, Indian Road. A short access from the existing county road into location will be constructed, about 1/4 of a mile. Drilling fluids will be recycled. Completion fluids will be hauled to a approved commercial saltwater disposal. Drill cuttings, mud solids and pit liner will be disposed of at a certified commercial disposal. The subsoil clays will be used to solidify the drill cuttings and fill the reserve pit.

### Health Hazards/Noise

(possible concerns)

Proximity to public facilities/residences: Closest residences are about 1/4 of a mile to the northeast, 1/4 of a mile to the south and 3/8 of a mile to the southwest from this location.

Possibility of H2S: Yes, possible H2S.

Size of rig/length of drilling time: Triple derrick drilling rig 20 to 30 days drilling time.

Mitigation:

☒ Proper BOP equipment

☐ Topographic sound barriers

☐ H2S contingency and/or evacuation plan

☐ Special equipment/procedures requirements

☐ Other: \_\_\_\_\_

Comments: Adequate surface casing cemented to surface with working BOP stack should mitigate any problems.

### Wildlife/recreation

(possible concerns)

Proximity to sensitive wildlife areas (DFWP identified): None identified.

Proximity to recreation sites: None identified.

Creation of new access to wildlife habitat: No

Conflict with game range/refuge management: No

Threatened or endangered Species: Only threatened and endangered species listed are the Pallid Sturgeon, Interior Least Tern, Piping Plover and Whooping Crane. Species listed as "Candidate Species" is the Sprague's Pipit. NH tracker website lists following one (1) species of concern in this Township and Range: Piping Plover.

Mitigation:

☐ Avoidance (topographic tolerance/exception)

☐ Other agency review (DFWP, federal agencies, DSL)

☐ Screening/fencing of pits, drillsite

\_\_\_ Other: \_\_\_\_\_

Comments: Private surface hay land. There maybe species of concern that maybe impacted by this wellsite. We ask the operator to consult with the surface owner as to what he would like done, if a species of concern is discovered at this location. The Board of Oil & Gas has no jurisdiction over private surface lands.

### Historical/Cultural/Paleontological

(possible concerns)

Proximity to known sites: None identified.

Mitigation

\_\_\_ avoidance (topographic tolerance, location exception)

\_\_\_ other agency review (SHPO, DSL, federal agencies)

\_\_\_ Other: \_\_\_\_\_

Comments: Private surface hay land. There maybe possible historical/cultural/paleontological sites that maybe impacted by this wellsite. We ask the operator to consult with the surface owner as to his desires to preserve these sites or not, if they are found during construction of the wellsite. The Board of Oil & Gas has no jurisdiction over private surface lands.

### Social/Economic

(possible concerns)

\_\_\_ Substantial effect on tax base

\_\_\_ Create demand for new governmental services

\_\_\_ Population increase or relocation

Comments: No concerns.

### Remarks or Special Concerns for this site

Drill a 16,326' MD/8800' TVD, single lateral horizontal Middle Bakken Formation test.

### Summary: Evaluation of Impacts and Cumulative effects

No long term impact expected with the drilling of this well, some short term impacts are expected.

I conclude that the approval of the subject Notice of Intent to Drill (does/**does not**) constitute a major action of state government significantly affecting the quality of the human environment, and (does/**does not**) require the preparation of an environmental impact statement.

Prepared by (BOGC): /s/Steven Sasaki

(title:) Chief Field Inspector

Date: October 17, 2011

Other Persons Contacted:

Montana Bureau of Mines and Geology, Groundwater Information Center website

(Name and Agency)

Roosevelt County water wells  
(subject discussed)  
October 17, 2011  
(date)

US Fish and Wildlife, Region 6 website  
(Name and Agency)  
ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES MONTANA  
COUNTIES, Roosevelt County  
(subject discussed)

October 17, 2011  
(date)

Montana Natural Heritage Program Website (FWP)  
(Name and Agency)  
Heritage State Rank= S1, S2, S3, T28N R53E  
(subject discussed)

October 17, 2011  
(date)

If location was inspected before permit approval:

Inspection date: \_\_\_\_\_

Inspector: \_\_\_\_\_

Others present during inspection: \_\_\_\_\_